Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for manufacturing a waveguide in a circuit structure using a multilayer ceramic technique, wherein said circuit structure is assembled of separate layers of ceramic, said ceramic having a permittivity ε_r which is higher than the corresponding value of air, and wherein, in said multilayer ceramic technique, layers, cavities, and holes are made in the ceramic layers and a conductive layer of material is silk screen printed on a ceramic layer, and the circuit structure is completed by exposing the circuit structure to a high temperature, said method comprising the steps of:

    forming two air-filled channels extending the length of the waveguide, wherein a core of the waveguide is defined between said two air-filled channels; and

    forming essentially parallel first and second planes of conductive material above and below the core part of the waveguide, wherein said first and second conductive planes define a top and a bottom of the core of the waveguide, and wherein said first and second conductive planes are defined between said two air-filled channels;

    wherein the multilayer ceramic technique is one of High Temperature Cofired Ceramics (HTCC) and Low Temperature Cofired Ceramics (LTCC).

2. (Currently Amended) The waveguide manufacturing method according to claim [~~1~~] 18, further comprising the step of:

    forming at least one row of vias in the core part of the waveguide, wherein said at least one row of vias is positioned close to one of the air-filled channels and each via in the at least one row of vias is filled with conductive material whereby said first and second planes of conductive material are galvanically connected.

3. (Currently Amended) A waveguide [~~integrated into a circuit unit~~] manufactured <u>using</u> [~~with~~] a multilayer ceramic technique[~~, wherein the circuit unit has been assembled of separate layers of ceramic, wherein a permittivity ε_r of the ceramic is higher than the corresponding permittivity value of air, and wherein, in said multilayer ceramics technique, layers, cavities, and holes are made in the ceramic layers, and a layer of conductive material is made on a ceramic layer, said waveguide~~] comprising:

a core [~~part~~] defined by:

two air-filled channels extending the length of the [~~sides of the~~] waveguide [~~core~~];

a bottom [~~layer~~] <u>surface</u> of conductive material <u>under</u> [~~extending the length of the bottom of~~] the waveguide core; and

a top [~~layer~~] <u>surface</u> of conductive material <u>on</u> [~~extending the length of the top of~~] the waveguide core[~~,~~]<u>;</u>

wherein said top and bottom layers are <u>substantially</u> [~~essentially~~] parallel <u>planes</u>[~~,~~]<u>;</u>

wherein said top and bottom layers <u>do not extend past</u> [~~are defined between~~] said two air-filled channels<u>; and</u>

<u>two remaining waveguide portions defined outside said two air-filled channels;</u>

<u>wherein the waveguide core and the two remaining portions comprise ceramic material having the same permittivity, and wherein said permittivity is greater than the permittivity of air</u>.

4. (Currently Amended) The waveguide according to claim 3, wherein said waveguide core further comprises:

at least one row of vias filled with conductive material and positioned close to one of the air-filled channels, whereby said vias galvanically connect said top and bottom <u>surfaces</u> [~~layers~~].

5. (Currently Amended) The waveguide according to claim 3, wherein a hole is disposed in the top <u>surface</u> [~~layer~~] of conductive material to thereby excite an electromagnetic field intended to propagate in the waveguide core.

6. (Currently Amended) The waveguide according to claim 3 [4], wherein a hole is disposed in the top surface [~~layer~~] of conductive material, and wherein said hole is fitted with a probe leading to the waveguide core to thereby excite an electromagnetic field intended to propagate in the waveguide.

7. (Currently Amended) The waveguide according to claim 3, wherein a hole is made in the top surface [~~layer~~] of conductive material, and wherein said hole is fitted with a coupling loop leading to the waveguide core to thereby excite an electromagnetic field intended to propagate in the waveguide.

8. (Currently Amended) The waveguide manufacturing method according to claim [~~1~~] 18, wherein the multilayer ceramic technique is one of High Temperature Cofired Ceramics (HTCC) and Low Temperature Cofired Ceramics (LTCC).

9. (Currently Amended) The waveguide manufacturing method according to claim [~~1~~] 18, wherein a width of each of the two air-filled channels is substantially one-fourth of a wavelength of a cutoff frequency of the waveguide.

10. (Currently Amended) The waveguide manufacturing method according to claim [~~1~~] 18, wherein a waveform that can propagate in the direction of the length of the waveguide is one of a transverse-electric or transverse-magnetic waveform.

11. (Currently Amended) The waveguide manufacturing method according to claim [~~1~~] 18, wherein an interface between the waveguide core and air in the two air-filled channels form a discontinuity of the characteristic impedance of the waveguide core.

12. (Currently Amended) The waveguide manufacturing method according to claim [~~1~~] 18, wherein a [~~the~~] ceramic structure comprising the waveguide is comprised substantially of the same ceramic material.

13. (Currently Amended) The waveguide manufacturing method according to claim [~~1~~] 18, wherein the substantially [~~essentially~~] parallel [~~first and second planes~~] layers of conductive material forming the top and bottom surfaces of the waveguide core either (i) substantially cover the [~~surface of the~~] waveguide core [~~part of the waveguide~~] or (ii) are partly gridded.

14. (Currently Amended) A method for [~~The waveguide~~] manufacturing a waveguide in a circuit structure using a multilayer ceramic technique, wherein said circuit structure is assembled of separate layers of ceramic, said ceramic having a permittivity ε_r which is higher than the corresponding value of air, and wherein, in said multilayer ceramic technique, layers, cavities, and holes are made in the ceramic layers and a conductive layer of material is silk screen printed on a ceramic layer, and the circuit structure is completed by exposing the circuit structure to a high temperature, [~~method according to claim 2, wherein the step of forming at least one row of vias in the core part of the waveguide comprises the steps of:~~] said method comprising the steps of:

forming two air-filled channels extending the length of the waveguide, wherein a core of the waveguide is defined between said two air-filled channels;

forming essentially parallel first and second planes of conductive material above and below the core part of the waveguide, wherein said first and second conductive planes define a top and a bottom of the core of the waveguide, and wherein said first and second conductive planes are defined between said two air-filled channels;

forming a first row of vias in the core part of the waveguide, wherein said first row of vias is positioned close to a first air-filled channel of the two air-filled channels; [~~and~~]

forming a second row of vias in the core part of the waveguide, wherein said second row of vias is positioned close to a second air-filled channel of the two air-filled channels; and

forming a third row of vias in the core part of the waveguide;

wherein each via is filled with conductive material whereby first and second planes of conductive material are galvanically connected.

15. (Currently Amended) The waveguide manufacturing method according to claim [~~14~~] 19, [~~wherein the step of forming at least one row of vias in the core part of the waveguide~~] further compris[~~es~~]ing the step of:

forming a third row of vias in the core part of the waveguide.

16. (Currently Amended) A method for [~~The waveguide~~] manufacturing a waveguide in a circuit structure using a multilayer ceramic technique, wherein said circuit structure is assembled of separate layers of ceramic, said ceramic having a permittivity ε_r which is higher than the corresponding value of air, and wherein, in said multilayer ceramic technique, layers, cavities, and holes are made in the ceramic layers and a conductive layer of material is silk screen printed on a ceramic layer, and the circuit structure is completed by exposing the circuit structure to a high temperature [~~method according to claim 1~~], said method comprising the steps of:

forming two air-filled channels extending the length of the waveguide, wherein a core of the waveguide [~~core~~] is defined between the two air-filled channels and two remaining portions of ceramic material are defined outside the two air-filled channels[~~, the method further comprising the step of:~~];

forming essentially parallel first and second planes of conductive material above and below the core part of the waveguide, wherein said first and second conductive planes define a top and a bottom of the core of the waveguide, and wherein said first and second conductive planes are defined between said two air-filled channels; and

forming at least one row of vias in one of the two remaining portions of ceramic material.

17. (Currently Amended) A method for [~~The waveguide~~] manufacturing a waveguide in a circuit structure using a multilayer ceramic technique, wherein said circuit structure is assembled of separate layers of ceramic, said ceramic having a permittivity ε_r which is higher than the corresponding value of air, and wherein, in said multilayer ceramic technique, layers, cavities, and holes are made in the ceramic layers and a conductive layer of material is silk screen printed on a ceramic layer, and the circuit structure is completed by exposing the circuit structure to a high temperature [~~method according to claim 1~~], said method [~~further~~] comprising the steps of:

forming two air-filled channels extending the length of the waveguide, wherein a core of the waveguide is defined between said two air-filled channels;

forming essentially parallel first and second planes of conductive material above and below the core part of the waveguide, wherein said first and second conductive planes define a top and a bottom of the core of the waveguide, and wherein said first and second conductive planes are defined between said two air-filled channels; and

forming a quarter-wave transformer at an end of the waveguide core where a signal is fed into the waveguide core.

18. (Previously Presented) A method for manufacturing a waveguide using a multilayer ceramic manufacturing technique, comprising the steps of:

forming two air-filled channels extending the length of the waveguide, whereby a waveguide core is defined between said two air-filled channels and two remaining waveguide portions are defined outside said two air-filled channels, wherein the waveguide core and the two remaining waveguide portions comprise ceramic material having the same permittivity, and wherein said same permittivity is greater than the permittivity of air;

forming a bottom surface of conductive material under the waveguide core, wherein said bottom surface does not extend over the remaining waveguide portions; and

forming a top surface of conductive material on the waveguide core, wherein said top surface does not extend over the remaining waveguide portions, wherein said top and bottom surfaces are substantially parallel planes.

19. (Currently Amended) The waveguide manufacturing method according to claim 18, further comprising the steps of:

forming a first row of vias in the waveguide core, wherein said first row of vias is positioned close to a first air-filled channel of the two air-filled channels; and

forming a second row of vias in the waveguide core, wherein said second row of vias is positioned close to a second air-filled channel of the two air-filled channels.

20. (Currently Amended) The waveguide manufacturing method according to claim 18, further comprising the step of:

forming a quarter-wave transformer at an end of the waveguide core where a signal is fed into the waveguide core.

21. (New) The waveguide manufacturing method according to claim 18, further comprising the step of:

forming at least one row of vias filled with conductive material and positioned close to one of the air-filled channels, whereby said vias galvanically connect said top and bottom surfaces.

22. (New) The waveguide manufacturing method according to claim 18, further comprising the step of:

disposing a hole in the top surface of conductive material by means of which an electromagnetic field can be excited to thereby propagate in the waveguide core.

23. (New) The waveguide manufacturing method according to claim 22, further comprising the step of:

fitting a probe in said hole, wherein said probe excites the electromagnetic field.

24. (New) The waveguide manufacturing method according to claim 22, further comprising the step of:

fitting a coupling loop in said hole leading to the waveguide core, wherein said coupling loop excites the electromagnetic field.

25. (New) The waveguide according to claim 3, wherein the multilayer ceramic technique is one of High Temperature Cofired Ceramics (HTCC) and Low Temperature Cofired Ceramics (LTCC).

26. (New) The waveguide according to claim 3, wherein a width of each of the two air-filled channels is substantially one-fourth of a wavelength of a cutoff frequency of the waveguide.

27. (New) The waveguide according to claim 3, wherein a waveform that can propagate in the direction of the length of the waveguide is one of a transverse-electric or transverse-magnetic waveform.

28. (New) The waveguide according to claim 3, wherein an interface between the waveguide core and air in the two air-filled channels form a discontinuity of the characteristic impedance of the waveguide core.

29. (New) The waveguide according to claim 3, wherein a ceramic structure comprising the waveguide is comprised substantially of the same ceramic material.

30. (New) The waveguide according to claim 3, wherein the substantially parallel layers of conductive material forming the top and bottom surfaces of the waveguide core either (i) substantially cover the waveguide core or (ii) are partly gridded.

31. (New) A method for manufacturing a waveguide in a circuit structure using a multilayer ceramic technique, wherein said circuit structure is assembled of separate layers of ceramic, said ceramic having a permittivity ε_r which is higher than the corresponding value of air, and wherein, in said multilayer ceramic technique, layers, cavities, and holes are made in the ceramic layers and a conductive layer of material is silk screen printed on a ceramic layer, and the circuit structure is completed by exposing the circuit structure to a high temperature, said method comprising the steps of:

forming two air-filled channels extending the length of the waveguide, wherein a core of the waveguide is defined between said two air-filled channels and a width of each of the two air-filled channels is substantially one-fourth of a wavelength of a cutoff frequency of the waveguide; and

forming essentially parallel first and second planes of conductive material above and below the core part of the waveguide, wherein said first and second conductive

planes define a top and a bottom of the core of the waveguide, and wherein said first and second conductive planes are defined between said two air-filled channels.